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1-1-2007

ARCAgent – Weld Process Quality Monitoring System

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DOI: 10.5703/1288284315921

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Recommended Citation

ECT Team, Purdue, "ARCAgent – Weld Process Quality Monitoring System" (2007). *ECT Fact Sheets*. Paper 212.
<http://dx.doi.org/10.5703/1288284315921>

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ARCAgent – WELD PROCESS QUALITY MONITORING SYSTEM

THE NEED

The ARCAgent arc weld (GMAW, GTAW, FCAW, SAW, SMAW) process monitoring system provides real-time weld quality analysis through monitoring, data acquisition, process fault detection and automated diagnostics. This system is suitable for application in automated and semi-automated (manual) arc-welding operations with any standard welding power supply (see Figure1).

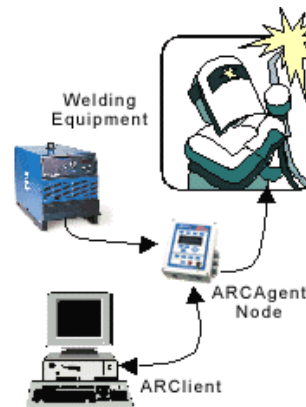


FIGURE 1 SEMI-AUTOMATED(MANUAL) WELDING OPERATIONS

The ARCAgent node measures actual welding parameters in real-time and compares them to limits established for the particular welding application.

THE TECHNOLOGY

The ARCAgent 2000 is a real-time monitoring and alarming unit for automated and semi-automated arc welding (GMAW, GTAW, FCAW, SAW, SMAW) applications (see Figure2). The ruggedized ARCAgent 2000 uses an embedded microprocessor for high speed analysis of arc current, supply voltage, gas flow, wire feed speed, and an additional 4-20 mA sensor to verify the weld process parameters. When process problems are detected, context specific diagnostics information is displayed directly to the operator for corrective action.



FIGURE 2 ARCAgent

An unique "Automated Learn Mode" provides quick setup for process alarm limits. One or more of the ARCAgent 2000 nodes can be networked to a PC using the ARClient software to support configuration management, data logging, weld signature analysis, SPC and production tracking. This software package provides the ability to capture, analyze and use process data to solve real-world production welding problems (see Figure3).

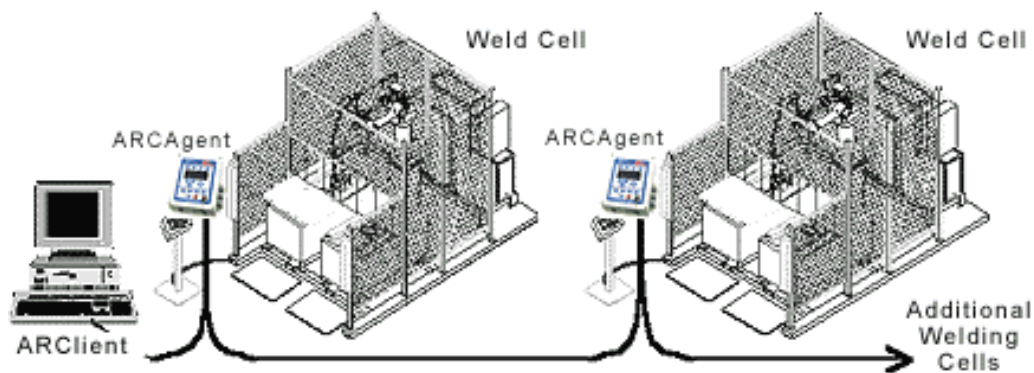


FIGURE 3 AUTOMATED PRODUCTION WELDING OPERATIONS

THE BENEFITS

- Provides real-time weld quality analysis
- Reduced Inspection Costs
- Determining Weld Quality
- Increased Cycle Time
- Reduce weld over-design margin



STATUS

The ARCAgent 2000 and ARClient software are commercially available from IMPACT Engineering. The Construction Industry Institute is evaluating starting a collaborative project to help evaluate and focus this technology on Construction Industry applications.

BARRIERS

- Real-time display and usage of information by individual welders.
- Setup and usage in highly variable manual operations.
- Portability and reliability in Construction environments.
- ROI and cost analysis in Construction industry applications.

POINTS OF CONTACT

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REFERENCES

1. Impact Engineering, Inc. <http://www.impactwelding.com/>, <http://www.impacteng.com/>

REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

Purdue University does not endorse this technology or represents that the information presented can be relied upon without further investigation.

PUBLISHER

Emerging Construction Technologies, Division of Construction Engineering and Management, Purdue University, West Lafayette, Indiana